WHAT IS CLAIMED IS:

1. A method for manufacturing a composite member comprising a porous substrate, an interfacial conductive portion where a conductive material is filled piercing through the entire thickness of the porous substrate, and a non-interfacial conductive portion where a conductive material is filled but not piercing the entire thickness of the porous substrate; said method comprising:

exposing a first region and a second region in said porous substrate using an exposure beam, the amount of exposure to said second region being not more than 50% of the amount of exposure to said first region, and an average size of voids of said porous substrate being, as expressed by a radius of gyration, 1/20 to 10 times the wavelength of said exposure beam;

forming said interfacial conductive portion and non-interfacial conductive portion by infiltrating a conductive material into said first region and said second region respectively.

2. The method for manufacturing a composite member according to claim 1, wherein said exposing a first region and a second region in said porous substrate using the exposure beam is performed through a mask comprising a first light-transmitting region for exposing said first region and a second light-transmitting region for exposing said

second region, and an average transmittance of said second light-transmitting region being not more than 50% of an average transmittance of said first light-transmitting region.

3. The method for manufacturing a composite member according to claim 2, wherein the average transmittance of said first light-transmitting region of said mask is in the range of 90% to 100%.

4. The method for manufacturing a composite member according to claim 2, wherein the average transmittance of said second light-transmitting region of said mask is 8.4% or more of an average transmittance of said first light-transmitting region.

5. The method for manufacturing a composite member according to claim 2, wherein the average transmittance of said second light-transmitting region of said mask is in the range of 15% to 35% of an average transmittance of said first light-transmitting region.

6. The method for manufacturing a composite member according to claim 2, wherein said second light-transmitting region comprises an aggregation of fine patterns of which an average aperture ratio is not more than 50% of an average aperture ratio of said first light-transmitting region.

7. The method for manufacturing a composite member according to claim 6, wherein the average

aperture ratio of said second light-transmitting region of said mask is 35% or less.

8. The method for manufacturing a composite member according to claim 6, wherein a size of said fine patterns of said second light-transmitting region is in the range of 0.1 μm to 10 μm.

9. The method for manufacturing a composite member according to claim 6, wherein said fine patterns of said second light-transmitting region are circular or polygonal in configuration, and said fine patterns are arranged in a triangular lattice pattern.

10. The method for manufacturing a composite member according to claim 9, wherein said fine patterns of said second light-transmitting region are circular in configuration, and a center-to-center distance between the neighboring circles is at least twice as large as the diameter of said circle.

11. The method for manufacturing a composite member according to claim 6, wherein said fine patterns of said second light-transmitting region are circular or polygonal in configuration, and said fine patterns are arranged to form a square lattice.

12. The method for manufacturing a composite member according to claim 6, wherein said fine patterns are stripe patterns having aperture ratio of not more than 50%, and the width between the neighboring stripe patterns is in the range of 0.1 μm to 10 μm.

13. A method for manufacturing a composite member comprising a porous substrate, non-interfacial conductive portions which are formed on the opposite surfaces of the porous substrate and where a conductive material is filled but not piercing the entire thickness of the porous substrate, and an interfacial conductive portion which is electrically connected with said non-interfacial conductive portions and where a conductive material is filled piercing through the entire thickness of the porous substrate; said method comprising:

disposing a couple of masks on the opposite surfaces of said porous substrate, respectively, said masks comprising a first light-transmitting region for exposing a first region of said porous substrate and a second light-transmitting region for exposing a second region on the opposite surfaces of said porous substrate, said second light-transmitting region comprising an aggregation of fine patterns, an average transmittance of said second light-transmitting region being not more than 50% of an average transmittance of said first light-transmitting region, and said each of masks aligned based on the position of said first light-transmitting region of each of said masks;

exposing said first region and said second region to a exposure beam through each of said masks, an average size of voids of said porous substrate

being, as expressed by a radius of gyration, 1/20 to 10 times the wavelength of said exposure beam;

forming said interfacial conductive portion and non-interfacial conductive portion by infiltrating a conductive material into said first region and said second region respectively.

14. The method for manufacturing a composite member according to claim 13, wherein the average aperture ratio of said second light-transmitting region of said masks is 35% or less.

15. The method for manufacturing a composite member according to claim 13, wherein a size of said fine patterns of said second light-transmitting region of said masks is in the range of 0.1 μm to 10 μm.

16. The method for manufacturing a composite member according to claim 13, wherein a size of said fine patterns of said second light-transmitting region of said masks is in the range of 0.5 μm to 5 μm.

17. The method for manufacturing a composite member according to claim 13, wherein said fine patterns of said second light-transmitting region are circular or polygonal in configuration, and said fine patterns are arranged in a triangular lattice pattern.

18. The method for manufacturing a composite member according to claim 17, wherein said fine patterns of said second light-transmitting region are circular in configuration, and a center-to-center

distance between neighboring circles is at least twice as large as the diameter of said circles.

19. The method for manufacturing a composite member according to claim 13, wherein said fine patterns of said second light-transmitting region are circular or polygonal in configuration, and said fine patterns are arranged in a square lattice pattern.

20. The method for manufacturing a composite member according to claim 13, wherein said fine patterns are stripe patterns having an aperture ratio of not more than 50%, and the width between the neighboring stripe patterns is in the range of 0.1 μm to 10 μm.